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## NEW AND LITTLE KNOWN AMERICAN MOLLUSKS, NO. 3.

BY H. A. PILSBRY.

In this third contribution toward a fuller knowledge of the mollusk inhabitants of our American streams and woods, the more notable paragraphs are those describing a new and exceptionally large *Vaginulus* from Bermuda, and the portion relating to the western helicoid, *Polygyrella Harfordiana*.

**Bulimulus Ragsdalei**, Pilsbry. (Pl. V, fig. 3 ).

This species was briefly described in the Proceedings for 1890, page 63; notes on the circumstances of its finding are given in the Nautilus for March, 1890, page 122. The specimen figured is rather wider than most of those before me. Measurements of three specimens are as follows:

Alt. 20, diam. 11 mm.; alt. of aperture 10 mm.

Alt. 21, diam. 11 mm.; alt. of aperture 10 mm.

Alt. 16½, diam. 8 mm.; alt. of aperture 8 mm.

Thus far, the species is known only from Cook and Montague Counties, Northern Texas. Collected by Mr. G. H. Ragsdale, of Gainesville, Texas.

**Pupa syngenes**, Pilsbry. (Pl. V, figs. 1, 2).

Shell sinistral, cylindrical but somewhat wider above, blunt at each end; light brown, whitish toward the apex; surface shining, delicately obliquely striate; apex large, obtuse; suture impressed; whorls 8, the last one compressed and flattened around the lower-outer portion, its last third ascending on the next earlier whorl, and elevated into a high rounded ridge or crest a short distance behind the outer lip; aperture slightly oblique, truncate-oval in form; the outer lip narrowly expanded, basal and columellar margins broader; about the middle of the parietal wall, or nearest the upper end, there is a small parietal lamella; far within there may be seen a blunt columellar lamella; and some specimens exhibit far within the outer lip the trace of an inferior or lower palatal fold.

Alt. 3½, diam. 1½ mm.

Habitat, Arizona; exact locality of the specimens before me not known.

I had at first considered this form as a variety of *P. muscorum*. It differs from that species in its sinistral convolution, in being

broader above the middle, having more numerous whorls, the last one more ascending on the penultimate; the ridge back of the outer lip is much stronger than in *muscorum*, and the lip itself less broadly expanded. The same characters will separate the species from *P. muscorum* var. *Blandi*.

**Zonites Shimekii**, Pilsbry. (Pl. V, figs. 9 10, 11).

A shell of about the size and shape of *Z. nitidus*; moderately umbilicated; chalky-white, without epidermis, on account of its fossil condition. Surface sculptured with strong curved riblets above, rather finely striated beneath. Spire low-conoidal; apex obtuse; first (or nuclear) whorl planorboid but noticeably projecting, a trifle mammillated, snowy-white, smooth and polished. Whorls  $4\frac{1}{2}$ , the outer three ribbed-striate. Aperture oblique, nearly circular, the ends of the peristome approaching.

Alt. 4, greater diam.  $5\frac{3}{4}$ , lesser  $5\frac{1}{4}$  mm.; width of umbilicus  $1\frac{1}{4}$  mm.

Habitat, Loess formation (Quaternary) of Iowa, at Iowa City, Ia.

This species has been familiar to me for some years, under the name of *Zonites limatulus*. It agrees with that form in the number of whorls and sculpture, except that the *Shimekii* is more strongly, regularly ribbed above. It differs from *limatulus* in being far more robust, more elevated, with rounder mouth and narrower, deeper umbilicus. Upon comparing specimens of the two species, I am surprised that they were ever confused; for, except in sculpture, the *Z. Shimekii* is far more like *Z. nitidus* than to *Z. limatulus*. The specimens described and figured were collected by Prof. B. Shimek, now of Lincoln, Nebraska.

This form is interesting as being the only well-defined species of Loess fossil which seems to have become extinct; although there are a number of others, such as *Helicina occulta* and *Patula strigosa* var., which survive in greatly reduced numbers in a few limited localities, or only in a distant part of the country.

**Vaginulus Schivelyæ**, Pilsbry. Pl. V, figs. 6, 7, 8.

Description of alcoholic specimens:

Light yellowish-gray above with two ill-defined longitudinal dark bands formed by the aggregation of black flecks and dots on either side of a dorsal light line. There are dark flecks scattered sparsely over the rest of the surface; and the middle area of the back is more or less smoke-colored; the lateral margins are grayish.

The underside is of a clear yellowish-gray tint. Upper tentacles blue-gray, lower yellowish-gray.

Body long, broadest in the middle, a little narrower in front, quite convex above, almost flat beneath except for the projecting sole. Surface above seen under a lens to be densely minutely punctate; coarsely more or less wrinkled toward the side-margins, and obscurely rather coarsely pitted. Sole rounded behind, its edges scalloped. Lung orifice somewhat lateral.

Measurements.

	Specimen No. 60,964.	Another specimen.
Total length	65 mm.	68 mm.
Length of the sole	61 "	63 "
Total breadth in the middle	18 "	16 "
Altitude in the middle	9 "	10 "
Breadth of mantle beneath :		
on right side of sole	7 "	5 "
on left side of sole	5 "	4 "
Breadth of sole in front	3 "	4 "
Breadth of sole in the middle	6½ "	7 "
Breadth of sole behind	5 "	4 "
Distance of genital opening :		
from front end	35½ "	37½ "
from tail end	28 "	30½ "
from the sole	1½ "	1 "
from the edge of mantle	4½ "	3½ "

Of this slug two specimens are before me: one (the type) in the collection of the Academy, the other belonging to Miss Mary A. Schively. They were collected in the Public Garden at St. George, Bermuda, in July, 1888. The more prominent external characters are the large size, dark, mottled coloration, and rather unusual nearness of the genital opening to the sole. One of the specimens is but slightly curved, the other is decidedly curved toward the ventral side; both are nearly flat below.

There may be some doubt entertained as to the origin of *Vaginulus* in Bermuda. The lists of Bland and others show the snail-fauna of the island to consist of three elements, viz.: indigenous or peculiar forms,<sup>1</sup> forms introduced by natural means from the West

<sup>1</sup> This includes only the genus *Pacilozonites* with four species and a number of varieties. See Pilsbry, in Proc. Acad. Nat. Sci. Phila. 1888, p. 285.

Indies,<sup>1</sup> and species imported by the agency of man from the United States and Europe.<sup>2</sup> In none of the countries named is there, however, a species of *Vaginulus* so large, or similar in characters to the one described; nor have I been able to find any description-at all agreeing with the specimens, although I have examined the literature for the *Vaginulus* species of all countries.<sup>3</sup>

**Helix (Polygyrella) Harfordiana** Cooper. Pl. V, figs. 12, 13, 14.

*Dædalochila Harfordiana* Cooper, Amer. Journ. of Conch., vol. V, pt. 4, p. 196, plate 17, fig. 8. See also *tom. cit.*, p. 214.

*Helix (Dædalochila) Harfordiana* Coop., Tryon, Manual of Conchology, 2d Series, vol. III, p. 130, pl. 27, figs. 55-57.

*Polygyra Harfordiana* Coop., W. G. Binney, Manual of N. A. Land Shells, p. 114, fig. 81, *but not the description!*

Not *Triodopsis Harfordiana* Cp., W. G. Binney, Terr. Moll. U. S. etc., V, p. 309, fig. 203, 1878.

This shell has been so much misunderstood and so incorrectly figured that I feel impelled to refigure it and to offer a few suggestions concerning the systematic position of the species. It was discovered in the year 1869 by Mr. W. G. W. Harford in the "Big Tree" district, Fresno County, California. The locality is an elevated one, lying 6500 ft. above the sea level, in lat. 37°.

In thus devoting space to the consideration of this question of systematic position, I do not wish to be understood to attach any great importance to those divisions of our Helices which some authors call *sections*, some *subgenera*, and still others designate as full fledged *genera*. I am fully aware that many of these divisions coalesce; we can no more trace the separating line between their species than we can unmix mingled milk and water. Thus, the species *Texasiana*, *triodontoides* and *Levettei* bridge the space between *Polygyra* and *Triodopsis*; *Mullani*, *appressa* etc., form passages from *Triodopsis* to *Mesodon*; and through *germana* with its allies on either side, *Mesodon* flows into *Stenotrema*. The recognition of the fact that these sections are all varying manifestations of one type, and

<sup>1</sup> Such as *Polygyra*, *Helicina*, *Succinea*, *Pupa*, the same species of which also inhabit various West Indian Islands.

<sup>2</sup> *Helix ventrosa*, *Stenogyra decollata* from Europe; *Helix appressa* from the United States; the last is not abundant in Bermuda and the colony may not be a permanent one.

<sup>3</sup> The principal works are Fisher's Monograph of the genus in Nouv. Arch. du Mus., VII, 1871, Heynemann's valuable articles in Jahrbücher Deutsch. Malak. Ges. XII, 1885, and Semper's beautiful work on the Philippine Island fauna.

that a native American one, lead me to associate them under the oldest name, *Polygyra*, in my check-list of our land shells.<sup>1</sup>

So much for the one side. And on this side there is full as much danger in holding extreme views, as on the side of excessive analysis. Let us not profess sweeping views on coalescence of minor groups until we have the species which actually show transition; and (to pass from generalizations to a special case), it may be noted here that while the species of the *Polygyra*+*Triodopsis*+*Mesodon*+*Stenotrema* group, invariably have a reflected lip, the two species belonging (as I claim) to *Polygyrella* have a blunt lip, not in the least expanded or reflexed. I prefer to keep very different things apart.

Dr. Cooper's original description is excellent, but the figures are bad. The latter are copied by Tryon in the Manual of Conchology. Binney describes a wholly different shell in his two publications—a shell which has, he states, an expanded lip. In his Manual of American Land Shells the species is said by him to have four whorls and is placed in *Polygyra*. Still later (3rd Supplement to Terr. Moll. V.) Mr. Binney seems to entertain a suspicion that the *Triodopsis Roperi* Pils. (which he strangely enough places in *Polygyra*!) is the same species. The mistakes and inconsistencies of this record would be indeed perplexing were it not for the fact that Mr. Binney has never seen the *H. Harfordiana*. A single examination would doubtless have convinced him that it is, as Dr. Cooper states in his original description, most intimately allied to *Polygyrella polygyrella*. Figure 81 of the Manual of American Land Shells is incorrect in showing the parietal tooth too far within the aperture. The original figures have the same defect.

With *Polygyrella polygyrella* this species agrees in general form, color, sculpture and texture, as well as in the form of the aperture and the *blunt, not at all expanded* lip. In texture and character of the lip both species are very different from *Polygyra* and *Triodopsis*; the species of these last two sections have the lip expanded and reflexed.

The section *Polygyrella* may be defined thus:

Shell disk-shaped, the spire nearly flat, periphery rounded, even in the young; umbilicus wide within, showing all the whorls. Texture somewhat vitreous and subtranslucent; ribbed-striate above, polished beneath; color yellow, yellowish-green or light brown. Whorls six to eight, narrow, slowly widening, the last a trifle descend-

<sup>1</sup> Proc. Acad. N. S. Phila. 1889, p. 193.

ing in front. Aperture subtriangular, oblique; peristome blunt, not expanded, thickened within, with or without lip teeth; parietal wall bearing a stout, triangular, erect entering tooth.

The species may stand as follows:

(1.) Peristome with two lip-teeth; no denticles inside the body-whorl. *H. Harfordiana.*

(2.) No lip-teeth; body-whorl with several internal pairs of denticles visible through the base. *H. polygyrella.*

Dr. Cooper's ingenious supposition that the internal denticles of *H. polygyrella* are "swallowed" lip teeth I find to be erroneous, as they are formed quite a distance within the whorl, not at the edge of the advancing lip.

*H. Harfordiana* has been found only at the spot named above, and only two specimens are known: that figured on the plate accompanying this paper, and one other, a young shell, in the collection of Dr. Cooper.

**Goniobasis Crandalli.** (Pl. V, figs. 4, 5).

Shell turreted, moderately tapering, truncated, with three and one-half whorls remaining. These are very convex, separated by deep sutures, and are more or less malleated (encircled by flattened facets). The texture is exceptionally thin for a Melanian. Color a very pleasing shade of olive-green, either unicolored or having two chestnut bands, a narrow one above the periphery and a wider on the base. The young are much more conical, more rapidly tapering than the adults, with an acuminate spire, and when quite young the body-whorl is seen to be angulated at the circumference. The aperture is ovate, less than half but exceeding a third the length of the whole shell; the lip is a trifle sinuous. The umbilical region is somewhat indented, and the inner lip is folded over upon it, very much as in *Limnæa*.

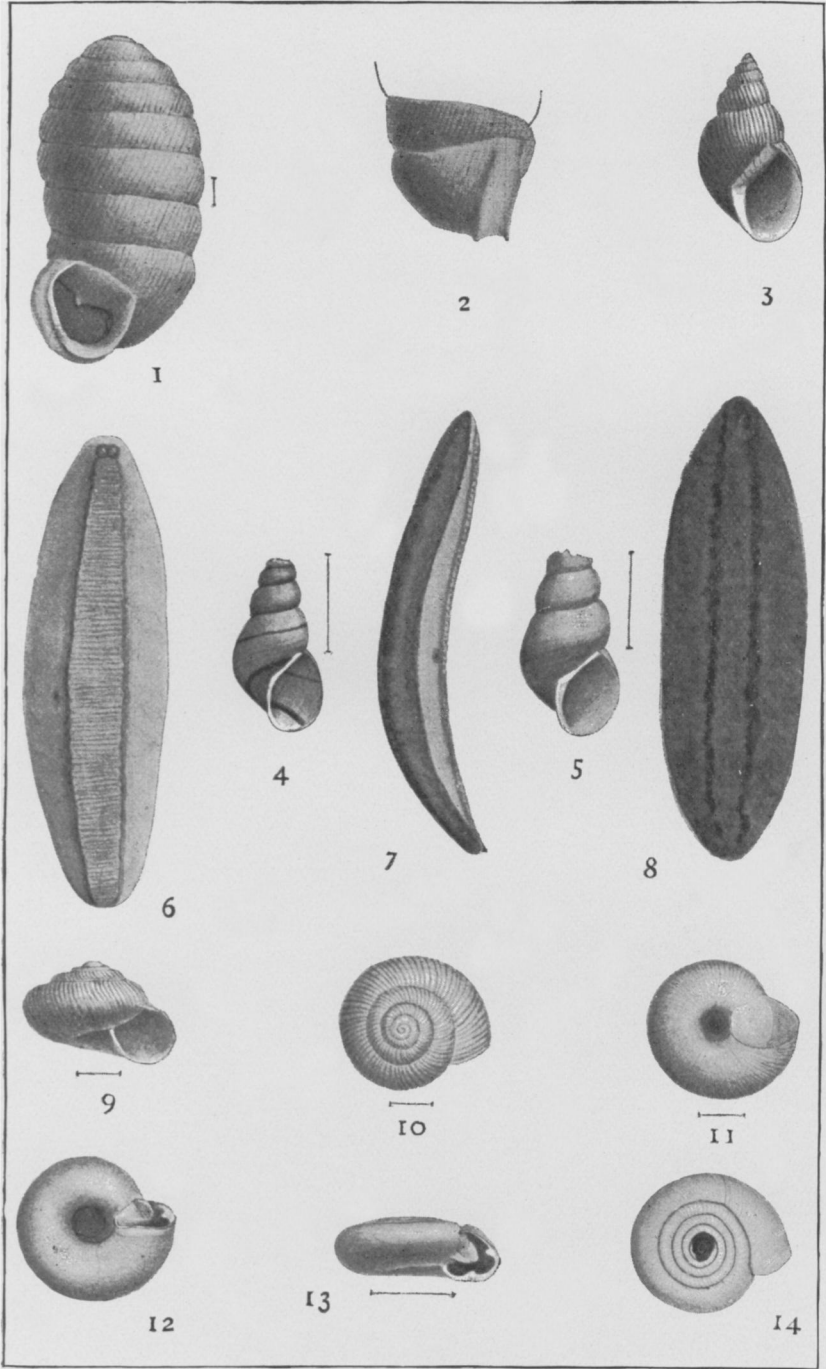
Alt.  $12\frac{1}{2}$ , diam. 6 mm.; alt. of aperture 5 mm., breadth  $3\frac{1}{2}$  to  $3\frac{3}{4}$  mm.

Habitat, Mammoth Spring, Arkansas.

A large number of shells have been examined by me, and comparisons made with all of the lengthened *Goniobases*. The only form really near in appearance is the western *G. nigrina*, which has similar round whorls. Of the species occupying the same geographic section, Professor Call's *G. Ozarkensis* is perhaps nearest; but no one could confuse specimens of the two, both young and adult shells having a completely diverse facies. Of the latter species I have

seen very many specimens; and through the courtesy of my friends Messrs O. A. Crandall and F. A. Sampson of Sedalia, Missouri, I have been enabled to study and compare a large number of other Trans-Mississippi Strepomatids.





PILSBRY, NEW AMERICAN MOLLUSKS.